

# Brentley Primary School - Science

## Topic: Electricity

Year: 4

## Strand: Physics

### What should I already know?

- **Electricity** is a form of **energy** that can be carried by wires and is used for heating and lighting, and to provide **power** for **devices**.
- **Sources** of light and sound may need **electricity** to work.

### What will I know by the end of the unit?

Where does **electricity** come from?

- **Electricity** is **generated** using **energy** from natural **sources** such as the Sun, oil, water and wind.
- These can also be called **fuel sources**.

Which **appliances** run on **electricity**?

- Some **appliances** use **batteries** and some use **mains electricity**.
- **Batteries** come in different sizes depending on how much and for how long the **appliance** is used.
- Common **appliances** that use **electricity**.



How does a **circuit** work?

- A complete **circuit** is a loop that allows **electrical current** to flow through **wires**.
- A **circuit** contains a **battery (cell)**, **wires** and an **appliance** that requires **electricity** to work (such as a **bulb**, **motor** or **buzzer**).
- The **electrical current** flows through the wires from the **battery (cell)** to the **bulb**, **motor** or **buzzer**.
- A **switch** can break or reconnect a **circuit**.
- A **switch** controls the flow of the **electrical current** around the **circuit**. When the **switch** is off, the **current** cannot flow. This is not the same as an incomplete **circuit**.

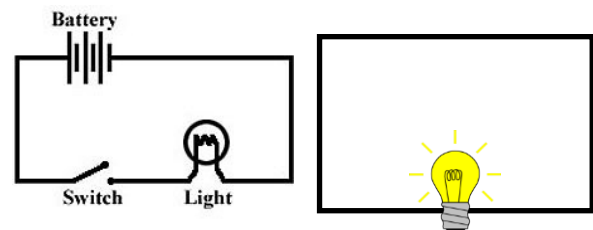
What are **electrical conductors** and **insulators**?

- When objects are placed in the **circuits**, they may or may not allow **electricity** to pass through.
- Objects that are made from materials that allow **electricity** to pass through a create a complete **circuit** are called **electrical conductors**.
- Objects that are made from materials that do not allow **electricity** to pass through and do not complete a **circuit** are called **electrical insulators**.

### Vocabulary

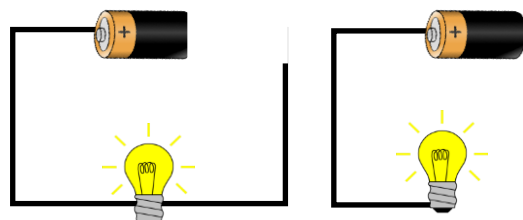
appliances	a <b>device</b> or machine in your home that you use to do a job such as cleaning or cooking. <b>Appliances</b> are often <b>electrical</b> .
battery	small <b>devices</b> that provide the <b>power</b> for <b>electrical</b> items such as torches
bulb	the glass part of an <b>electric</b> lamp, which gives out light when <b>electricity</b> passes through it.
buzzer	an <b>electrical device</b> that is used to make a buzzing sound
cell	a synonym for <b>battery</b>
circuit	a complete route which an <b>electric current</b> can flow around
component	the parts that something is made of
conductor	a substance that heat or <b>electricity</b> can pass through or along
current	a flow of <b>electricity</b> through a <b>wire</b> or <b>circuit</b>
device	an object that has been invented for a particular purpose
electricity	a form of <b>energy</b> that can be carried by <b>wires</b> and in used for heating and lighting, and to provide <b>power</b> for <b>devices</b>
energy	the <b>power</b> from <b>sources</b> such as <b>electricity</b> that makes machines work or provides heat
fuel	a substance such as coal, oil, or petrol that is burned to provide heat or <b>power</b>
generate	cause it to begin and develop
insulator	a <b>non-conductor</b> of <b>electricity</b> or heat
mains	where the supply of water, <b>electricity</b> , or gas enters a building
motor	a <b>device</b> that uses <b>electricity</b> or fuel to produce movement
power	<b>Power</b> is <b>energy</b> , especially <b>electricity</b> , that is obtained in large quantities from a fuel <b>source</b> and used to operate lights, heating, and machinery
source	where something comes from
switch	a small control for an <b>electrical device</b> which you use to turn the <b>device</b> on or off
wires	a long thin piece of metal that is used to fasten things or to carry <b>electric current</b>

### Diagrams



These are complete **circuits** - they have a **battery (cell)** and a **component (bulb)**.

The **wires** are placed in the right places of the **battery** for the **circuit** to work.



These **circuits** will not work as they are incomplete.

### Investigate!

- Research how to work safely with **electricity**.
- Make a variety of **circuits**, investigating which **circuits** work and why.
- Name the basic parts including **cells**, **batteries**, **wires**, **bulbs**, **switches**, **motors** and **buzzers**.
- Draw **circuits** using pictorial representations (not circuit symbols).
- Create **circuits** using **switches**.
- Investigate which materials are **electrical conductors** and **insulators**.

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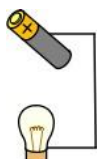
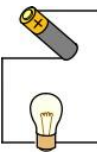
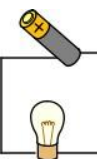
**Strand: Physics**

Question 1: Another name for a battery is:	Start of unit:	End of unit:
circuit		
light		
buzzer		
cell		

Question 2: Which of these need electricity to work?	Start of unit:	End of unit:
torch		
mobile phone		
games console		
car		

Question 3: How will you know if a material conducts electricity?	Start of unit:	End of unit:
Electricity will flow freely and the circuit will work		
Electricity will not flow and the circuit will not work		
The battery will not work		

Question 4: Which of these are conductors of electricity?	Start of unit:	End of unit:
plastic comb		
cardboard strip		
aluminium spoon		
copper coin		

Question 5: Which of these circuits will light?	Start of unit:	End of unit:
		
		
		

Question 6: Objects that are made from materials that do <b>not</b> allow electricity to pass through are called:	Start of unit:	End of unit:
conductors		
insulators		
batteries		

Question 7: Why is it dangerous to use an electrical appliance near water?	Start of unit:	End of unit:

Question 8: A circuit will not work if....(tick three):	Start of unit:	End of unit:
there is no battery		
the switch is off		
there is a break in the circuit		
there is no switch		

Question 9: When more batteries are added to a complete circuit...	Start of unit:	End of unit:
the light bulb does not go on		
the light bulb becomes brighter		
the circuit does not work		
the switch goes off		

Question 10: Why will this circuit not work?	Start of unit:	End of unit:
